REMARKS

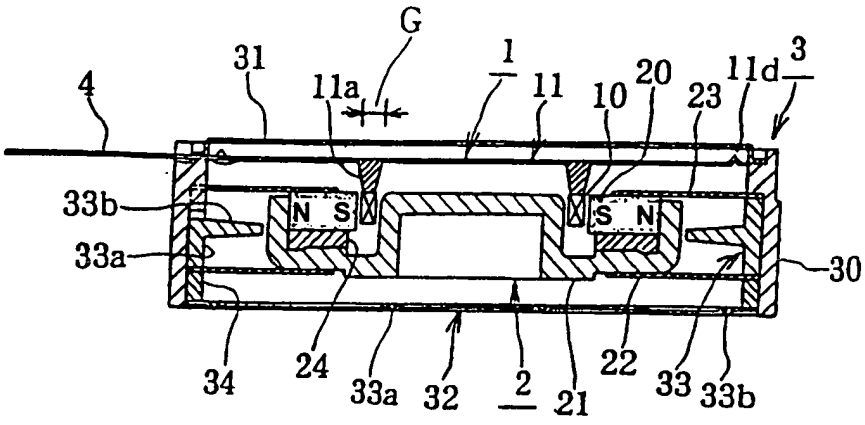
The Official Action mailed February 21, 2002 has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Continued Examination (RCE)* and a *Request for Three Month Extension of Time* which extends the shortened statutory period for response to August 21, 2002. Accordingly, Applicant respectfully submits that this response is being timely filed.

Applicants notes with appreciation the consideration of the Information Disclosure Statement filed on February 6, 2001.

Claims 1-14 were pending in the present application, of which claims 4-7 and 11-14 have been withdrawn from consideration leaving claims 1-3 and 8-10 subject to examination. Claim 3 has been canceled and claims 1 and 2 have been amended herewith to further clarify the present invention. It is respectfully submitted that the amendments to claims 1 and 2 would not necessitate further consideration or search and are thus believed to be proper for entry after final. Claims 1-2 and 8-10 are now pending for examination in the present application, of which claims 1, 8 and 10 are independent. For the reasons set forth in detail below, these claims are believed to be in condition for allowance.

Paragraph 2 of the Official Action rejects claims 1 and 2 as anticipated based on U.S. Patent 5,528,697 to Saito. While the Official Action makes reference to a rejection under 35 U.S.C. 112, second paragraph, no such rejection can be found and thus the claims are understood to be in accord with 35 U.S.C. 112, second paragraph.

In accordance with one feature of claim 1, a magnetic arrangement is provided that locates an axis of a north pole and south pole parallel to a diaphragm and a vibration plate. Thus, the axis of the magnetic poles are parallel to diaphragm 11 and vibration plates 22 and 23 as shown in Figure 1 of the present application. That is, the axis is in a generally horizontal direction in Figure 1, as illustrated in the marked-up copy of Figure 1 below provided for clarification. Of course, in accordance with claim 1, the positions of the north and south poles could be interchanged such that the south pole is located at an outer periphery of the ring shape magnet and the north pole located at the inner periphery of the ring shape magnet.



Claim 1 has been amended herewith to more clearly recite this feature of the present invention. It is, however, respectfully submitted that this feature was previously recited in claim 1 and that therefore no further consideration or search is necessary in view of this amendment. Specifically, claim 1 previously recited that the "magnet is radially arrayed and positioned with its north and south poles parallel to the diaphragm and the vibration plate." It is respectfully submitted that the present amendments merely serve to clarify this language in view of the above illustration.

Accordingly, magnetic flux that is generated beside the diaphragm 11 is parallel to diaphragm 11 when the magnetic flux from the north to the south pole of the magnetic structure. Consequently, influence of the leakage of magnetic flux on other parts of the portable electronic equipment in which the present invention is used is reduced when the actuator as recited in claim 1 is mounted in the portable electronic equipment.

As more clearly recited in claim 1, the electro-magnetic actuator of the present invention has a magnet that is positioned with its north pole and south pole parallel to a diaphragm and a vibration plate. To the contrary, in Figure 5 of Saito, the north pole is located at an upside of magnet 28, and south pole is located at a downside of magnet 28. Accordingly, an axis of the magnetic poles is perpendicular to the diaphragm 24 and vibration plate (spring body) 27. As noted above, this is a different orientation than

that of the present invention and thus it is submitted that the claims of the subject application are not anticipated by Saito.

When an electro-magnetic actuator as in Saito is mounted in portable electronic equipment, leakage of magnetic flux to the outside of the electro-magnetic actuator can easily occur and enter other parts of the portable electronic equipment. As a result, unit 30 in Saito is attracted to other parts of the device. Since the direction of the leakage of magnetic flux is perpendicular to a vibration plate, for example, this magnet structure can be more readily attracted to other parts than can a magnet structure as recited in claim 1 of the present application. Consequently, in Saito, the position of unit 30 can undesirably move by attraction between the magnet and the other parts. Since unit 30 is offset in the case, vibration movement distance of unit 30 become shorter on diaphragm 24 side. Thus, the total vibration distance of unit 30 decreased and desired vibration characteristics cannot be achieved.

With reference to claim 2, it is noted that reference number 24 in Figure 5 of Saito is a diaphragm, but diaphragm 24 operates to generate sound by vibration when a high-frequency signal is applied. On the other hand, the vibration plate 27 in Figure 5 of Saito serves to support a magnetic circuit (i.e. unit 30), and operates to generate tactile vibration (e.g. vibration used to inform of the arrival of mail in a portable telephone) when a low-frequency signal is impressed. Thus, diaphragm 24 is a plate that does not support the magnetic circuit (i.e. unit 30), and does not generate tactile vibration, but rather generates sound. Accordingly, structure and purpose of the diaphragm 24 differs from vibration plate 27.

Thus, the magnetic circuit (i.e. unit 30) in Figure 5 of Saito is supported only by one vibration plate (spring body) 27, and the structure shown in Figure 5 not a double-suspension structure as recited in claim 2 of the subject application, but rather a single-suspension structure. The two vibration plates in claim 2 are plates that support a magnetic circuit (i.e. reference 2 in Figure 1 of the present application), and these two vibration plates do not include a diaphragm (i.e. a plate that generates sound by vibration). Rather, the structure recited in claim 2 is a double-suspension structure because a magnetic circuit (second vibrator) 2 is supported by two plates.

This double-suspension structure is effective at suppressing external leakage of magnetic flux and at improving the vibration characteristics. Specifically, the double-suspension structure provides greater magnetic shielding and this suppresses external leakage of the magnetic flux, while the vibration characteristics are improved by improvement of the vibration resistance.

It is respectfully submitted that claim 2 of the subject application and the disclosure of Saito in Figure 5, for example, are patentably distinguishable since the present invention and Saito have different structures. The present invention discloses and claims a double-suspension structure while Saito discloses only a single-suspension structure. Thus, it is submitted that claim 2 cannot be anticipated by Saito and favorable reconsideration is requested in view of the above remarks.

Paragraph 4 of the Official Action rejects claim 3 as obvious based on the combination of Saito and U.S. Patent 4,956,868 to Carlson. In response, Applicant has canceled claim 3 and thus this rejection is moot.

Paragraph 5 of the Official Action rejects claims 8-10 as obvious based on Saito. For the reasons that follow, it is respectfully submitted that Saito fails to disclose or suggest each and every limitation recited in these claims and thus that a *prima facie* case of obviousness cannot be maintained.

Specifically, claims 8-9 of the subject application recite a mounting structure in which two vibration plates (reference numbers 22 and 23 in Figure 1) are supported within a basket (reference 3 in Figure 1) by an elastic piece (reference 33 in Figure 1). As further recited in claim 8, elastic piece 33 presses against the surface of the outer rim of the vibration plates. These vibration plates generate tactile vibration when a low-frequency signal is applied, but do not generate sound such as that generated by a diaphragm. Accordingly, the claimed vibration plate is quite different from the structure shown in Saito. By supporting the vibration plate with an elastic piece, the support structure can reduce or eliminate impact damage to second vibrator 2, since this impact is suppressed by elastic 33. Thus, impact resistance is improved in the structure of the present invention.

Additionally, as recited in claim 9, elastic 33 includes a protrusion 33b such that even if second vibrator 2 is moved to a side due to an impact or the like, second vibrator

2 will contact with flange 33b and further sideways motion is prevented. Thus, large distortion of vibration plates 22 and 23 by side-to-side motion or shaking of the second vibrator 2 are prevented, thus resulting in a device having greater impact resistance.

It is respectfully submitted that Saito fails to disclose or suggest these features of the present invention and favorable reconsideration is requested. Specifically, Saito fails to disclose any element that corresponds to elastic piece 33 as recited in claim 8 and clearly fails to disclose such a piece having an inward protrusion as recited in claim 9. Therefore, claims 8 and 9 and believed to be patentably distinguished from Saito and favorable reconsideration is requested.

With reference to claim 10, by attaching a coil 10 (Figure 1 of the present application) to projection 11a at diaphragm 11, a support member that supports coil 10 is unnecessary and reduction in the number of parts is achieved and the mounting of coil 10 is simpler. Additionally, in accordance with the claimed structure, the present invention can separate the support point of coil 10 from a vibration portion of diaphragm 11b (Figure 2) by projecting the support point of coil 10 from a surface of the diaphragm and by attaching coil 10 at this point. Using this structure, vibration of the vibration portion 11b of the diaphragm is not influenced by coil 10, and good frequency characteristics of the diaphragm can be achieved. It is respectfully submitted that the above structure, as recited in claim 10, is not disclosed or suggested by Saito and favorable reconsideration is requested.

In paragraph 6, the Official Action responds to applicant's earlier arguments. In [1], the Official Action asserts that Applicant has not claimed, nor has the Examiner considered, a pole alignment wherein a ring magnet includes a south pole located at a [outer] periphery of the ring and a north pole located at an inner periphery of the ring. Applicant respectfully disagrees that this feature of the present invention has not been claimed. Claim 1, prior to amendment herewith, recited a magnet that is radially arrayed and positioned with its north and south poles parallel to the diaphragm and the vibration plate. It is respectfully submitted that no reasonable interpretation of this claim language could read on the disclosure of Saito and the Official Action has failed to specifically address how Saito discloses north and south poles that are parallel to the diaphragm and the vibration plate. Additionally, claim 1 has been further amended

herewith to more early recite this feature of the present invention and it is respectfully submitted that claim 1 is patentably distinguished from Saito.

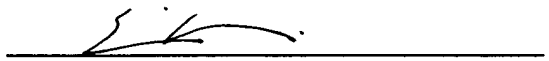
Similarly, in item [2], the Official Action asserts that Saito shows the poles being parallel to the diaphragm in Figure 5. This is not understood and clarification is requested. Specifically, it is not understood how Saito could be interpreted such that the axes of the poles are parallel to the diaphragm.

Finally, in item [3], the Official Action asserts that Saito shows the diaphragm being supported by an elastic member 27 within the basket. As noted above, however, the claimed elastic piece and member 27 of Saito are clearly different and it is unclear how member 27 could be said to press against the outer rim of a vibration plate as recited in claim 8. Furthermore, claim 9 recites that the elastic piece includes an inward protrusion that cannot be found in Saito and that is not clearly addressed by the Official Action.

For all of the above reasons, it is respectfully submitted that the rejections of claims 1-2 and 8-10 as anticipated or obvious based on Saito cannot be maintained and favorable reconsideration is requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please cancel claim 3 and amend claims 1 and 2 as follows:

1. (Twice Amended) An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, with the coil positioned within the magnetic gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate are accommodated in a basket in which the magnet is formed in a ring shape, and the magnet is magnetized with a south pole located at one of an outer or inner periphery of the ring shape magnet and a north pole located at the other of an inner or outer periphery of the ring shape magnet, and the ring shape magnet is radially arrayed and positioned with an axis of its north and south poles parallel to the diaphragm and the vibration plate.

2. (Amended) An electromagnetic actuator as described in claim 1 above, in which [there are] the magnet and the magnet yoke have two vibration plates [with the magnet between them,] and the two vibration plates are fixed inside the basket, and the magnet and the magnet yoke are supported by the two vibration plates in the basket, and the two vibration plates providing a double-suspension structure.